Installer Manual

Ventilation Systems for residential use only

VB0013

Solo 1.5 (part #: 43720 and 43725)

Solo 2.0 (part #: 45720 and 45725)

VB0012

Duo 1.2 (part #: 43710)

Duo 1.4 (part #: 43700)

Duo 1.9 (part #: 45700)

VENMAR®

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About this Manual

This manual uses the following symbols to emphasize particular information:

⚠ WARNING

Identifies an instruction which, if not followed, might cause serious personal injuries including possibility of death.

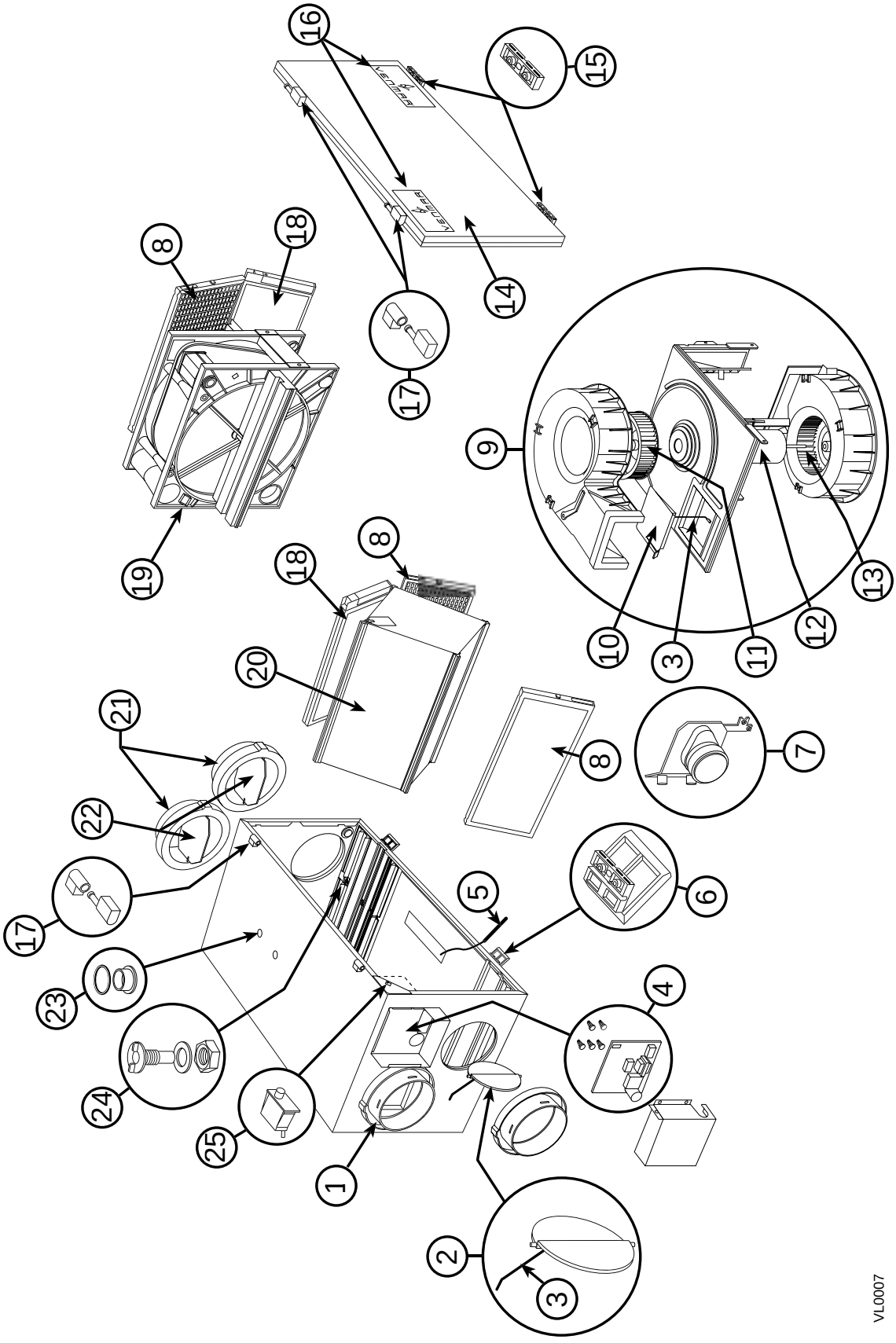
CAUTION

Denotes an instruction which, if not followed, may severely damage the unit and/or its components.

NOTE: Indicates supplementary information needed to fully complete an instruction.

1.0 Service

1.1 3-D Drawing



1.0 Service (cont'd)

1.2 Parts Ordering Chart

No	Description	SOLO 1.5 (A) 43720 (B) 43725	SOLO 2.0 (A) 45720 (B) 45725	DUO 1.2 43710	DUO 1.4 43700	DUO 1.9 45700
1	Double Collar Port #2	02257	02257	02257	02257	02257
2	Damper #1 (kit)	12454	12454	12454	12454	12454
3	Damper Rod (kit)	13037	13037	13037	13037	13037
4	Electronic Board & spacers (kit)	13038	13038	13039	13039	13039
5	Thermistor (kit)	12895	12895	12895	12895	12895
6	Door Latches & screws	00886 (2) 00601 (4)	00886 (2) 00601 (4)	00886 (2) 00601 (4)	00886 (2) 00601 (4)	00886 (2) 00601 (4)
7	Damper Actuator Assembly	13734	13734	13734	13734	13734
8	Basic Filter	03308	03308	03308	03308	03308
9	Blower Assembly	12908	12912	12909	12909	12911
10	Square Damper (kit)	13033	13033	13033	13033	13033
11	Top Wheel	02238	02238	02238	02239	02239
12	Motor	12109	12157	12109	12109	12157
13	Bottom Wheel	02240	02240	02239	02239	02240
14	Door Ass'y (including 15 to 17)	13346	13346	13346	13346	13346
15	Door Latches (keeper) & Screws	00887 (2) 00601 (4)	00887 (2) 00601 (4)	00887 (2) 00601 (4)	00887 (2) 00601 (4)	00887 (2) 00601 (4)
16	Label	03328	03328	03328	03328	03328
17	Hinge Ass'y (kit)	13036	13036	13036	13036	13036
18	Pleated Optional Filter Charcoal Optional Filter Electronic Optional Filter	03316 03315 03314	03316 03315 03314	03316 03315 03314	03316 03315 03314	03316 03315 03314
19	Thermal Wheel	N/A	N/A	13045	13044	13045
20	Recovery Core	(A) 03322 (B) 03311	(A) 03322 (B) 03311	N/A	N/A	N/A
21	Balancing Double Collar Port	02256	02256	02256	02256	02256
22	Balancing Damper	02253	02253	02253	02253	02253
23	Snap Bushing DP-750 & O-Ring	03324 (2) 03310 (4)	03324 (2) 03310 (4)	03324 (2) 03310 (4)	03324 (2) 03310 (4)	03324 (2) 03310 (4)
24	Drain Connector (kit)	03203	03203	N/A	N/A	N/A
25	Door Switch (SPST), E69 10A	01825	01825	01825	01825	01825

Please take note that parts not listed are not available; those parts require assembly knowledge that only manufacturer can guarantee.

TO ORDER PARTS: Contact your local distributor.

1.3 Technical Support (for assistance)

For assistance, call on weekdays, 8:30 AM to 5:00 PM (Eastern Standard Time).
NOTE: Do not call this number for ordering parts.

Canada & USA: 1-800-649-0372 (toll free)

2.0 Sizing

These are the two most common methods used to evaluate the ventilation needs of a house:

CSA F326 and Canadian Building Code:

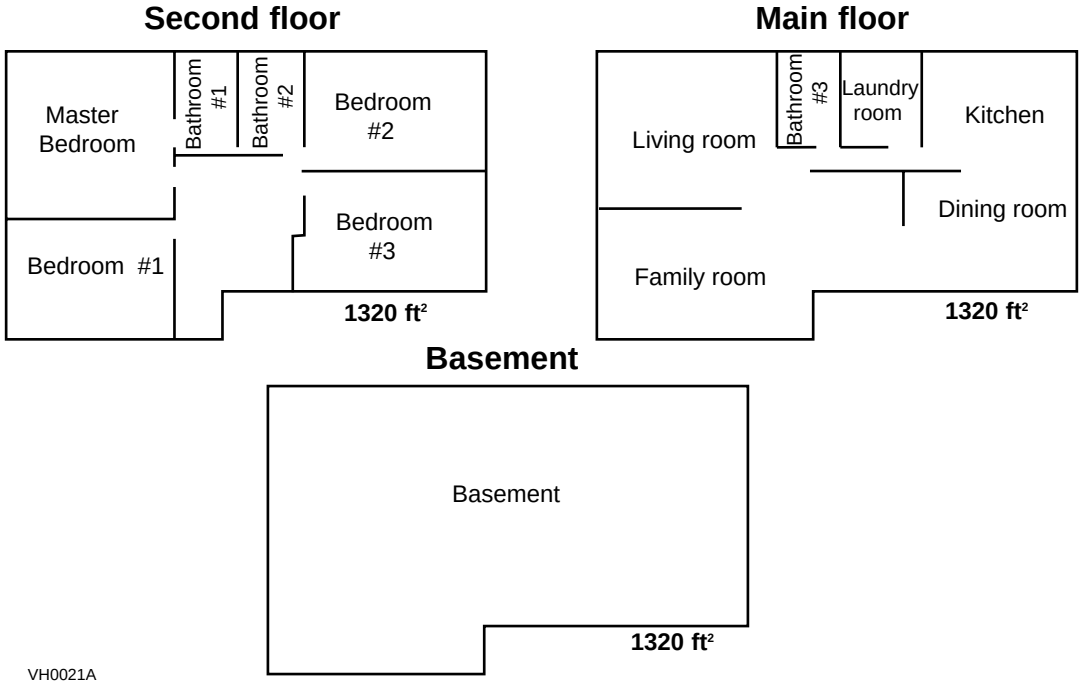
- High speed: 10 cfm per room
  20 cfm for the master bedroom and the basement
- Low speed: 40-60% of high speed

ASHRAE Standard 62-2001:

- 0.35 air change per hour

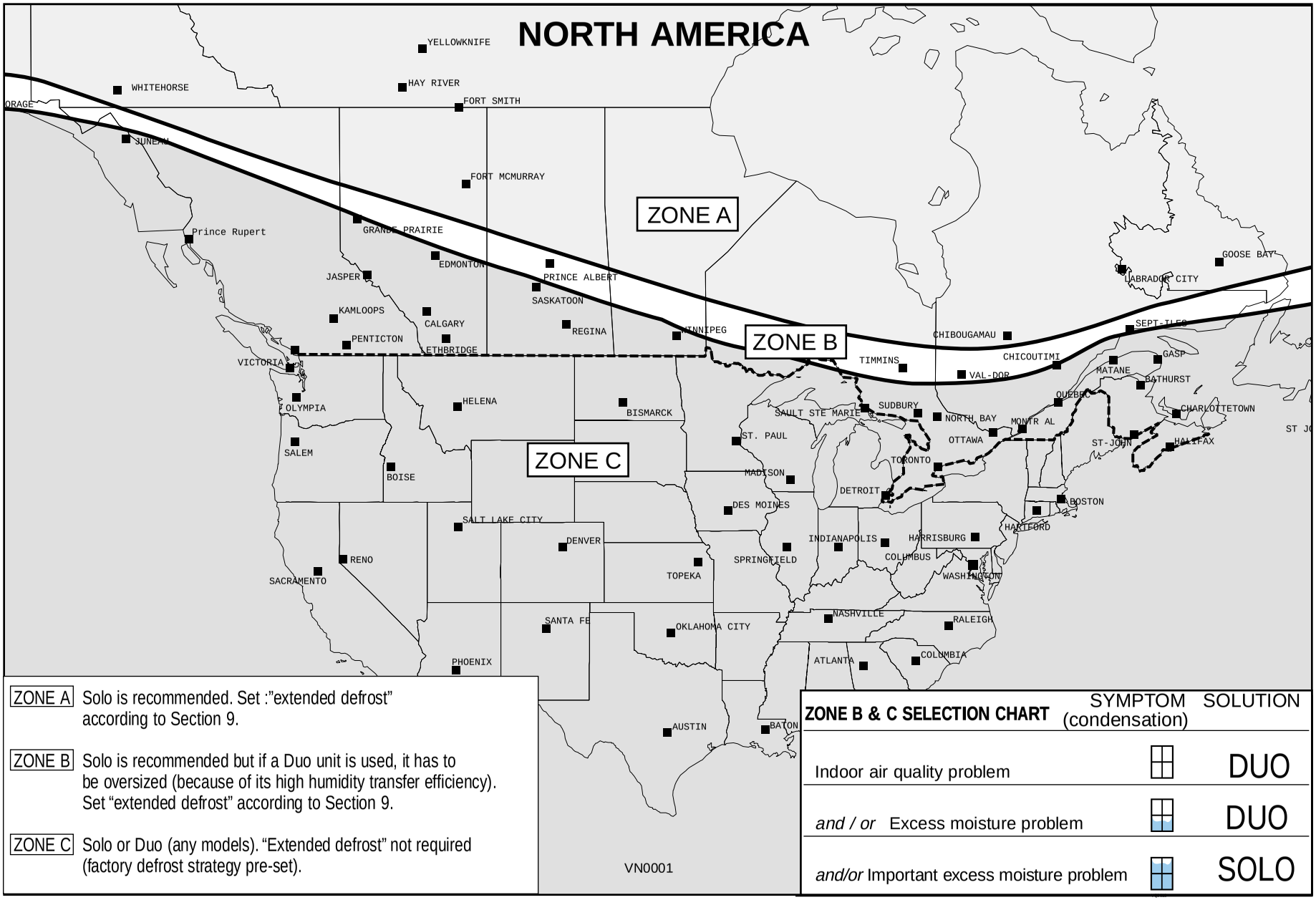
Refer to ventilation code of your area to determine which method to use.

Example:



CSA F326	
Kitchen	(10 cfm)
Dining room	(10 cfm)
Living room	(10 cfm)
family room	(10 cfm)
Master bedroom	(20 cfm)
Bedroom #1	(10 cfm)
Bedroom #2	(10 cfm)
Bedroom #3	(10 cfm)
Bathroom #1	(10 cfm)
Bathroom #2	(10 cfm)
Bathroom #3	(10 cfm)
Laundry room	(10 cfm)
Basement	(20 cfm)
Total	**150 cfm**

ASHRAE Standard 62-1989	
Volume of basement	10560 ft³
Volume of main floor	10560 ft³
Volume of second floor	10560 ft³
Total volume	**31680 ft³**
	x 0.35/h
	11090 ft³/h
	÷ 60 (min/h)
Total	**185 cfm**



ZONE A Solo is recommended. Set :"extended defrost" according to Section 9.

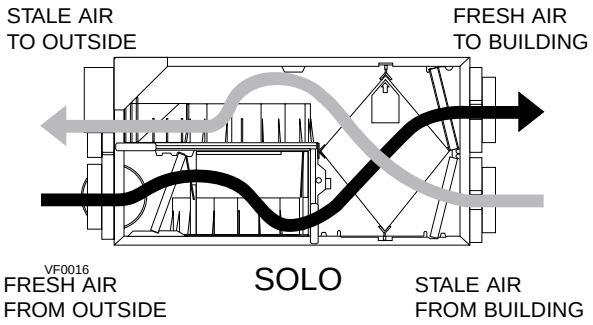
ZONE B Solo is recommended but if a Duo unit is used, it has to be oversized (because of its high humidity transfer efficiency). Set "extended defrost" according to Section 9.

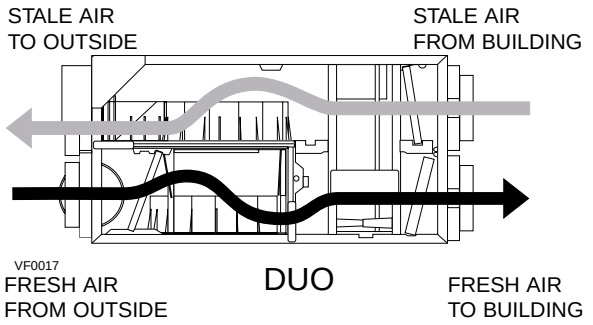
ZONE C Solo or Duo (any models). "Extended defrost" not required (factory defrost strategy pre-set).

ZONE B & C SELECTION CHART	SYMPTOM (condensation)	SOLUTION
Indoor air quality problem		DUO
and / or Excess moisture problem		DUO
and/or Important excess moisture problem		SOLO

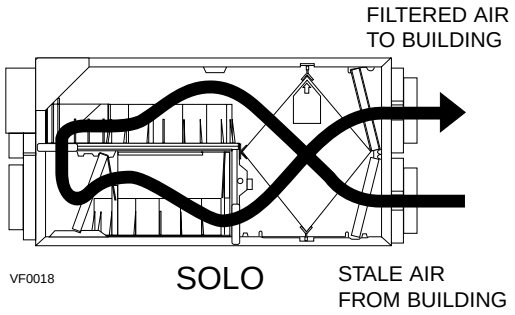
4.0 Technical Data

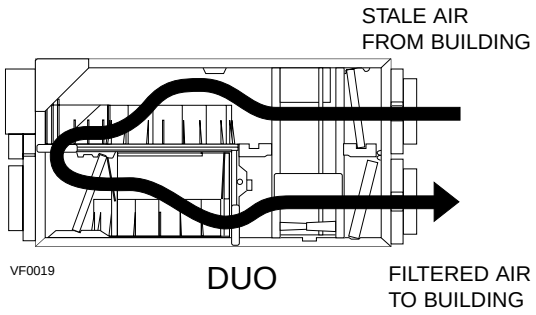
4.1 Air Distribution (Normal Operation)





4.2 Air Distribution (Defrost and/or Filtration Mode)





SOLO units

Outside Temperature		Defrost Cycles		Extended Defrost Cycles	
Celcius (˚C)	Fahrenheit (˚F)	Defrosting (min.)	Operation time (min.) between each defrost cycle	Defrosting (min.)	Operation time (min.) between each defrost cycle
-5	23	6	60	10	30
-15	5	6	32	10	20
-27	-17	6	20	10	15

DUO units

Outside Temperature		Defrost Cycles		Extended Defrost Cycles	
Celcius (˚C)	Fahrenheit (˚F)	Defrosting (min.)	Operation time (min.) between each defrost cycle	Defrosting (min.)	Operation time (min.) between each defrost cycle
-5	23	9	60	10	30
-15	5	9	32	10	20
-27	-17	9	20	10	15

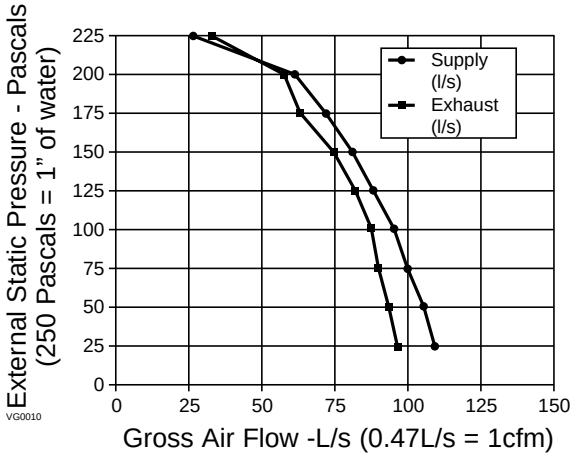
4.3 Performance Charts

MODEL NUMBER: SOLO 1.5

Electrical requirements: 120 volts, 1.3 amps.
Exhaust air transfer ratio: 0.01

VENTILATION PERFORMANCE

External Static Pressure		Net Supply Air Flow		Gross Air Flow Supply		Gross Air Flow Exhaust	
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm
25	0.1	83	175	83	176	82	175
50	0.2	79	168	80	169	78	165
75	0.3	75	159	75	159	75	158
100	0.4	71	150	71	151	69	146
125	0.5	64	136	64	136	60	127
150	0.6	60	126	60	127	48	103
175	0.7	53	113	53	113	38	80
200	0.8	43	91	43	91	21	45



ENERGY PERFORMANCE

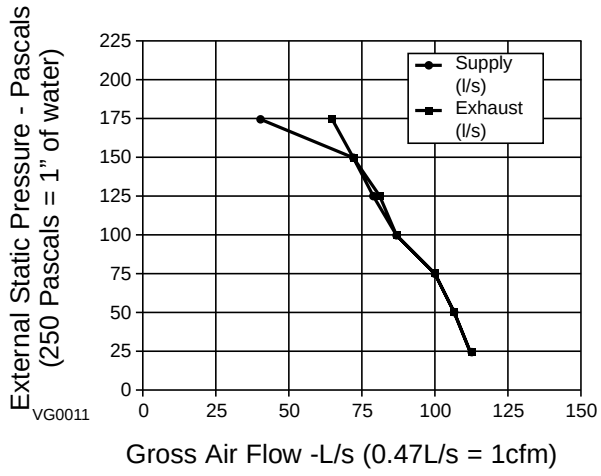
	Supply Temperature		Net Air Flow		Average Power	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Latent Recovery Moisture Transfer
	°C	°F	L/s	cfm	watts	%	%	
HEATING	0	32	31	66	85	69	81	-0.01
	0	32	56	119	124	60	70	-0.01
	0	32						
	-25	-13	37	78	114	62	80	0.08
	-25	-13						
							Total Recovery Efficiency	
COOLING	35	95					Not tested	
	35	95						

MODEL NUMBER: SOLO 2.0

Electrical requirements: 120 volts, 2.1 amps.
Exhaust air transfer ratio: 0.01

VENTILATION PERFORMANCE

External Static Pressure		Net Supply Air Flow		Gross Air Flow Supply		Gross Air Flow Exhaust	
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm
25	0.1	110	234	112	237	112	237
50	0.2	104	219	105	223	106	225
75	0.3	98	208	100	211	99	210
100	0.4	89	189	91	192	91	193
125	0.5	84	177	85	180	82	174
150	0.6	71	151	72	153	71	149
175	0.7	64	136	65	138	44	94



ENERGY PERFORMANCE

	Supply Temperature		Net Air Flow		Average Power	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Latent Recovery Moisture Transfer
	°C	°F	L/s	cfm	watts	%	%	
HEATING	0	32	56	119	124	60	70	-0.01
	0	32	86	182	197	53	62	-0.01
	-25	-13	37	78	114	62	80	0.08
	-25	-13						
							Total Recovery Efficiency	
COOLING	35	95					Not tested	
	35	95						

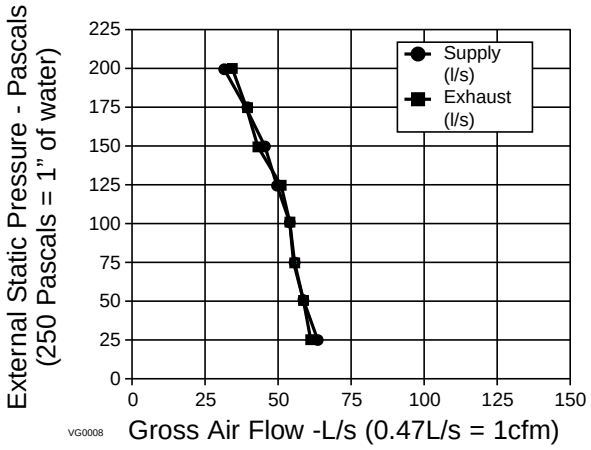
4.3 Performance Charts (cont'd)

Model number: DUO 1.2

Electrical requirements: 120 volts, 1.4 amps.
Exhaust air transfer ratio: 0.01

VENTILATION PERFORMANCE

External Static Pressure		Net Supply Air Flow		Gross Air Flow			
				Supply		Exhaust	
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm
25	0.1	62	131	62	133	64	137
50	0.2	59	125	60	127	61	130
75	0.3	58	123	58	124	58	123
100	0.4	54	114	55	116	55	117
125	0.5	51	108	52	110	50	107
150	0.6	45	95	45	96	47	99
175	0.7	39	83	39	84	40	85
200	0.8	31	65	31	66	29	62



ENERGY PERFORMANCE

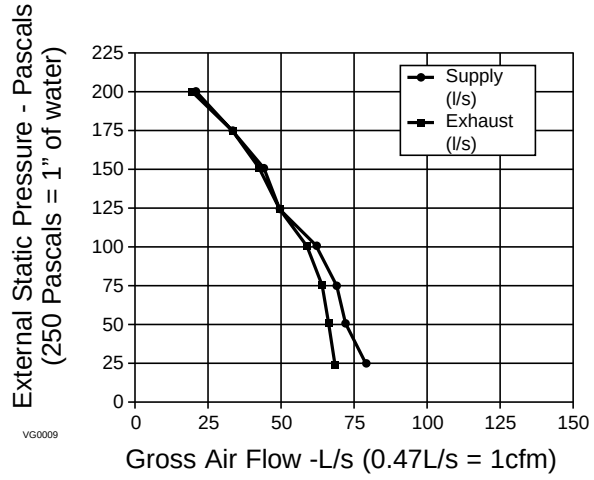
	Supply Temperature		Net Air Flow		Average Power	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Latent Recovery Moisture Transfer
	°C	°F	L/s	cfm	watts	%	%	
HEATING	0	32	32	68	108	77	87	0.61
	0	32	56	119	156	71	81	0.56
	0	32						
	-25	-13	51	108	189	66	82	0.69
	-25	-13						
							Total Recovery Efficiency	
COOLING	35	95	31	66	103		75	
	35	95	55	117	151		69	

Model number: DUO 1.4

Electrical requirements: 120 volts, 1.4 amps.
Exhaust air transfer ratio: 0.02

VENTILATION PERFORMANCE

External Static Pressure		Net Supply Air Flow		Gross Air Flow			
				Supply		Exhaust	
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm
25	0.1	69	145	70	148	78	165
50	0.2	65	137	66	140	72	153
75	0.3	60	127	61	129	65	138
100	0.4	57	120	58	123	60	127
125	0.5	49	104	50	106	49	104
150	0.6	43	91	44	93	42	89
175	0.7	30	64	31	66	31	66
200	0.8	22	46	22	47	23	49



ENERGY PERFORMANCE

	Supply Temperature		Net Air Flow		Average Power	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Latent Recovery Moisture Transfer
	°C	°F	L/s	cfm	watts	%	%	
HEATING	0	32	32	68	110	70	80	0.79
	0	32	47	100	164	65	74	0.67
	0	32	57	121	172	64	72	0.60
	-25	-13	29	61	120	64	79	0.65
	-25	-13						
							Total Recovery Efficiency	
COOLING	35	95	31	66	104		69	
	35	95	57	121	168		61	

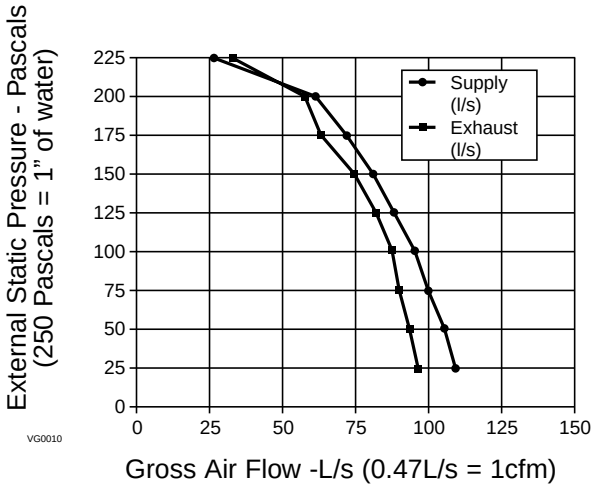
4.3 Performance Charts (cont'd)

Model number: DUO 1.9

Electrical requirements: 120 volts, 2.2 amps.
Exhaust air transfer ratio: 0.01

VENTILATION PERFORMANCE

External Static Pressure		Net Supply Air Flow		Gross Air Flow Supply		Gross Air Flow Exhaust	
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm
25	0.1	97	206	98	208	100	233
50	0.2	95	202	96	204	106	224
75	0.3	89	189	90	191	100	211
100	0.4	85	180	86	182	94	199
125	0.5	80	169	81	171	89	189
150	0.6	74	157	75	159	81	173
175	0.7	65	138	66	139	73	156
200	0.8	56	119	57	120	59	125
225	0.9	34	71	34	72	26	56

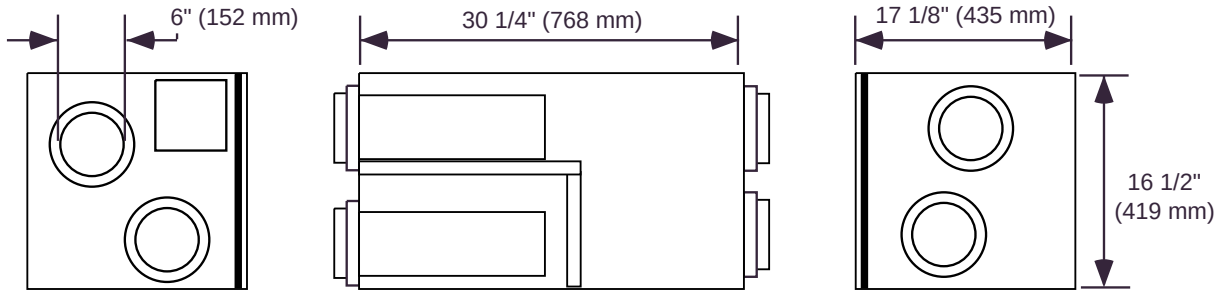


ENERGY PERFORMANCE

	Supply Temperature		Net Air Flow		Average Power	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Latent Recovery Moisture Transfer
	°C	°F	L/s	cfm	watts	%	%	
HEATING	0	32	56	119	156	71	81	0.56
	0	32	84	178	230	65	72	0.46
	0	32						
	-25	-13	51	108	189	66	82	0.69
	-25	-13						
							Total Recovery Efficiency	
COOLING	35	95	55	117	151		69	
	35	95						

4.0 Technical Data (cont'd)

4.4 Dimensions



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4.5 Controls and Link Options

Main controls:
- Venta
- Supra
- Ultima

Optional controls:
- 20/40/60-minute push-button timer
- 20-minute wireless push-button timer
- 60-minute crank timer
- Dehumidistat

Link options:
- Furnace interlock (used with forced air systems)
- Interface for the *Perfect Climate Comfort Center™* (Honeywell control, W8900)

4.6 Specifications

Model	Solo 1.5	Solo 2.0	Duo 1.2	Duo 1.4	Duo 1.9
Weight	71 lbs (32 kg)	73 lbs (33 kg)	79 lbs (36 kg)	75 lbs (34 kg)	77 lbs (35 kg)
Port Diameter	6" (152 mm)	6" (152 mm)	6" (152 mm)	6" (152 mm)	6" (152 mm)
Drain Diameter	1/2" (12 mm)	1/2" (12 mm)	N/A	N/A	N/A
Installation	Chains, springs and hooks (provided with the unit).				
Motor Speed	High and low speed factory set (optional increased or decreased low speed).				
Electrical supply	120 V, 60 Hz	120 V, 60 Hz	120 V, 60 Hz	120 V, 60 Hz	120 V, 60 Hz
Power Consumption	150 watts	240 watts	160 watts	160 watts	250 watts

5.0 Typical Installations

Installations may vary according to the model number and the position (normal or reverse) in which the unit is installed.

There are three (3) common installation methods.

5.1 Fully Ducted System

(Primarily for homes with radiant hot water or electric baseboard heating. See figure 1.)

Moist, stale air is exhausted from the high humidity areas in the home, such as bathrooms, kitchen and laundry room. Fresh air is supplied to bedrooms and principal living areas.

The use of bathroom fans and a range hood is suggested to exhaust stale air.

Homes with more than one level require at least one exhaust register at the highest level.

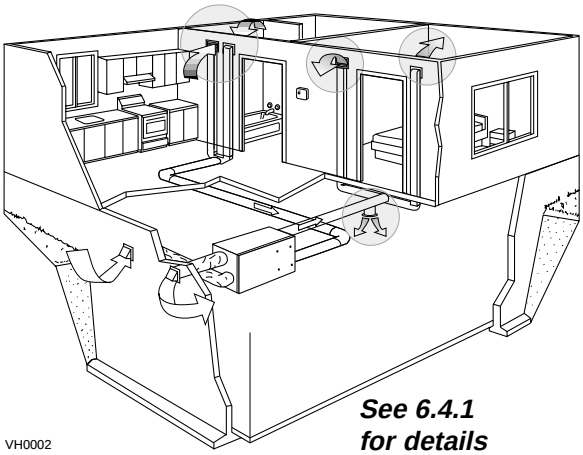


figure 1

5.2 Exhaust Ducted System *(Source Point Ventilation)*

(For homes with forced air heating. See figure 2.)

Moist, stale air is exhausted from the high humidity areas in the home, such as bathrooms, kitchen and laundry room. Fresh air is supplied to the cold air return or the supply duct of the furnace. The use of bathroom fans and a range hood is suggested to exhaust stale air.

Homes with more than one level require at least one exhaust register at the highest level.

NOTE: For this type of installation, it is not essential that the furnace blower runs when the unit is in operation, but we recommend it.

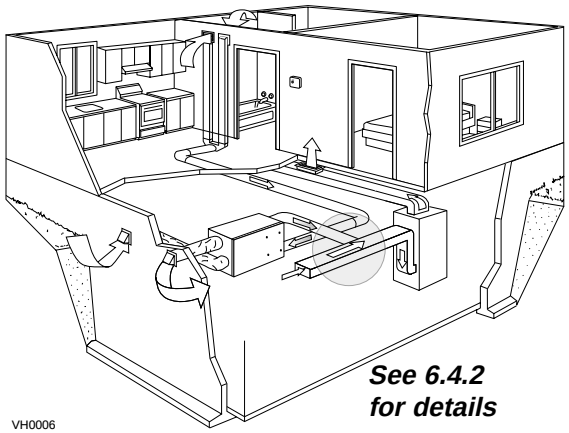


figure 2

5.3 Simplified *(Volume Ventilation)*

(For homes with forced air heating. See figure 3.)

Fresh air and exhaust air flow through the furnace ducts which simplifies the installation.

The use of bathroom fans and a range hood is suggested to exhaust stale air.

NOTE: For this type of installation, the **furnace blower should be running** when the unit is in operation.

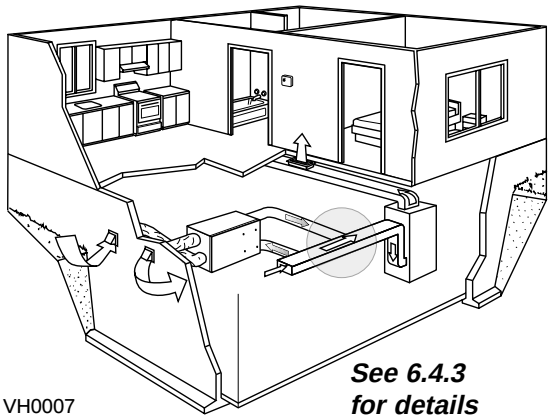


figure 3

6.0 Installation

INSPECT THE CONTENTS OF THE BOX

- Inspect the **exterior of the unit** for shipping damage. Ensure that there is no damage to the door, door latches, door hinges, dampers, duct collars, cabinet, etc.
- Inspect the **interior of the unit** for damage. Ensure that the fan motor assembly, recovery module, insulation, dampers, damper actuator and condensation tray (Solo) are all intact.
- If the unit was damaged during shipping, contact your local distributor. (Claim must be made within 24 hours after delivery.)
- Use checklist included with the unit to ensure that no parts are missing.

6.1 LOCATING AND MOUNTING THE UNIT

NOTE: ***Please note that the unit can be installed in either the "normal" or "reverse" (upside down) position.***

Choose an **appropriate location** for the unit:

- Within an area of the house where the temperature is above 10°C / 50°F (basement, attic, furnace room, laundry room, etc.).
- Away from living areas (dining room, living room, bedroom), if possible.
- So as to provide easy access to the interior cabinet and to the control panel on the side of the unit.
- Close to an exterior wall, so as to limit the length of the insulated flexible duct to and from the unit.
- Close to a drain. If no drain is close by, use a pail to collect run-off. (Solo models only.)
- Away from hot chimneys, electrical panel and other fire hazards.
- Allow for a power source (standard outlet).

Hang the unit with the 4 chains and springs provided (see figures 4 and 5).

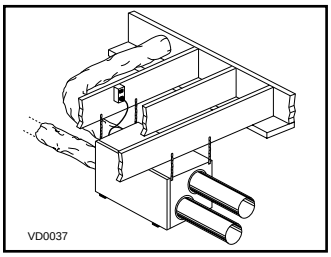


figure 4

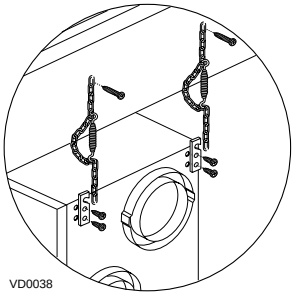


figure 5

CAUTION

Make sure the unit is level, with a 1/8" (3 mm) tilt backwards (see figure 6).

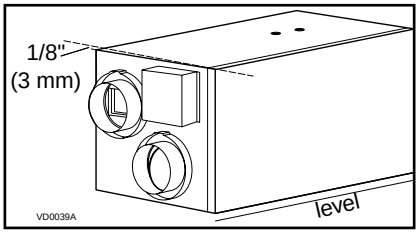


figure 6

6.2 PLANNING OF THE DUCTWORK

a) Follow the instructions in Section 6.3 next page to determine the appropriate duct diameters for your system.

b) Keep it simple. Plan for a minimum number of bends and joints. Keep the length of insulated duct to a minimum.

c) Do not use wall cavities as ducts. Do not use branch lines smaller than 4" (102 mm) Ø.

d) Do not ventilate crawl spaces or cold rooms. Do not attempt to recover the exhaust air from a dryer or a range hood. This would cause clogging of the recovery module. Use sheet metal for the kitchen exhaust duct.

e) Be sure to plan for at least one exhaust register on the highest lived-in level of the house if it has 2 floors or more.

6.0 Installation (cont'd)

6.3 Calculating the Duct Size

Use the table below to ensure that the ducts you intend to install will be carrying air flows <u>at or under</u> the recommended values. Avoid installing ducts that will have to carry air flows near the maximum values and never install a duct if its air flow exceeds the maximum value.

Duct Diameter	Recommended Air Flow			Maximum Air Flow		
4"(102 mm)	40 cfm	19 l/s	68 m³/h	60 cfm	28 l/s	102 m³/h
5"(127 mm)	75 cfm	35 l/s	127 m³/h	110 cfm	52 l/s	187 m³/h
6"(152 mm)	120 cfm	57 l/s	204 m³/h	180 cfm	85 l/s	306 m³/h
7"(178 mm)	185 cfm	87 l/s	314 m³/h	270 cfm	127 l/s	459 m³/h
8"(203 mm)	260 cfm	123 l/s	442 m³/h	380 cfm	179 l/s	645 m³/h

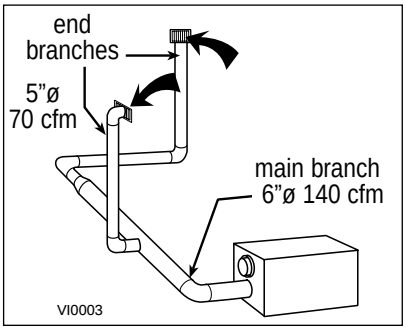


figure 7

NOTE: Examples 6.2.1 and 6.2.2 use imperial measures.
The same calculation applies to metric measures.

6.3.1 Example of calculation:

Problem: My installation requires two exhaust registers (one for the kitchen, one for the bathroom). I will connect these registers to a main duct which will connect to the unit (high speed performance value of 140 cfm). What size of duct should I use for the main exhaust duct and for the two end branches leading to the registers? (See figure 7.)

Solution: <u>Simplified method.</u> (For a more detailed method of calculating duct size refer to the ASHRAE or HRAI HANDBOOK).

<u>Main duct:</u> Table above indicates a 6" Ø duct: recommended air flow: 120 cfm; maximum air flow: 180 cfm. The high speed air flow of 140 cfm is close enough to the recommended value (120) and far enough away from the maximum value (180). Therefore a 6"Ø duct or larger is an appropriate choice for the <u>main exhaust duct.</u>

<u>End branches</u>: Each end branch will have to transport an air flow of 70 cfm (140 divided by 2). Table above indicates a 5"Ø duct: recommended air flow: 75 cfm; maximum air flow: 110 cfm. The high speed air flow of 70 cfm is close enough to the recommended value (75) and far enough away from the maximum value (110). Therefore a 5"Ø duct or larger is an appropriate choice for the <u>2 end branches</u>.

NOTE**:** A 4"Ø duct would have been too small because the maximum acceptable value for a 4"Ø duct is 60 cfm.

6.3.2 Example of a design for a fully ducted system for a unit having a high speed performance of 222 cfm (See figure 8).

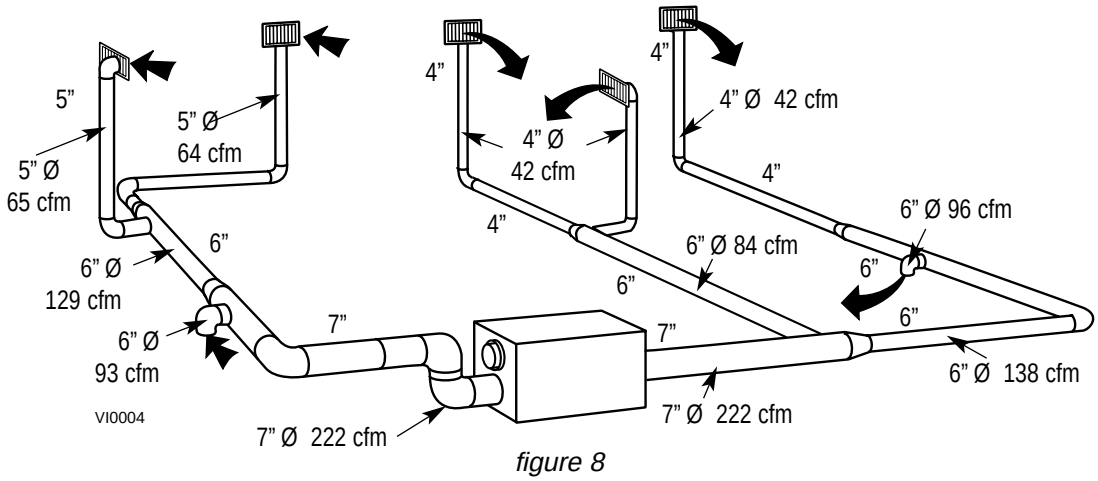


figure 8

6.0 Installation (cont'd)

6.4 Installing the Ductwork and Registers

⚠ WARNING

Never install a stale air exhaust register in a room where there is a combustion device, such as a gas furnace, a gas water heater or a fireplace.

6.4.1 Fully Ducted System (as illustrated in Section 5.1)

Stale air exhaust ductwork:

- Install registers in areas where contaminants are produced: kitchen, bathrooms, laundry room, etc.
- Install registers 6 to 12 inches (152 to 305 mm) from the ceiling on an interior wall OR install them in the ceiling.
- Install the kitchen register at least 4 feet (1.2 m) from the range.
- If possible, measure the velocity of the air flowing through the registers. If the velocity is higher than 400 ft/min. (122 m/min), then the register type is too small. Replace with a larger one.

Fresh air distribution ductwork:

- Install registers in bedrooms, dining room, living room and basement.
- Install registers either in the ceiling or high on the walls with air flow directed towards the ceiling. (The cooler air will then cross the upper part of the room, and mix with room air before descending to occupant level.)
- If a register must be floor installed, direct the air flow up the wall.

6.4.2 Exhaust Ducted System (Source Point Ventilation) (as illustrated in Section 5.2)

Stale air exhaust ductwork: (same as for Fully Ducted System, described on point 6.4.1)

Fresh air distribution:

⚠ WARNING

When performing duct connection to the furnace, installation must be done in accordance with all applicable codes and standards. Please refer to your local building code.

CAUTION

When performing duct connection to the furnace supply duct, this duct must be sized to support the additional airflow produced by the ERV/HRV. Also, use a steel duct with a backdraft damper. If there is no backdraft damper, it is mandatory that the ERV/HRV must always be running when the furnace is in operation to prevent the risk of overheating the ERV/HRV.

There are two methods for connecting the unit to the furnace:

Method 1: supply side connection

- Cut an opening into the furnace supply duct at least 18 inches (0.5 m) from the furnace.
- Connect this opening to the fresh air distribution port of the HRV/ERV (use **steel duct**, see figure 9).
- Make sure that the HRV/ERV duct forms an elbow inside the furnace ductwork.
- If desired, interlock (synchronize) the furnace blower operation with the HRV/ERV operation. (See Section 8.5).

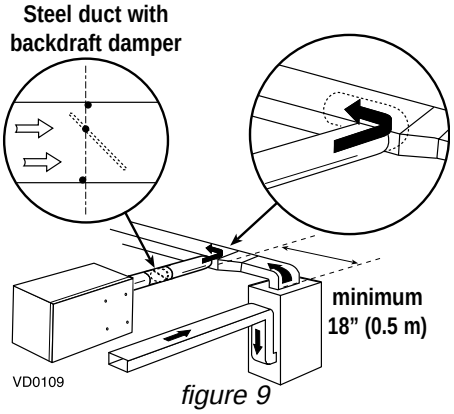


figure 9

Method 2: return side connection

- Cut an opening into the furnace return duct not less than 10 feet (3.1m) from the furnace (A+B).
- Connect this opening to the fresh air distribution port of the HRV/ERV (see figure 10).

NOTE: For Method 2, it is not essential that the furnace blower runs when the unit is in operation, but we recommend it. If desired, synchronize the furnace blower operation with the HRV/ERV operation (see Section 8.5).

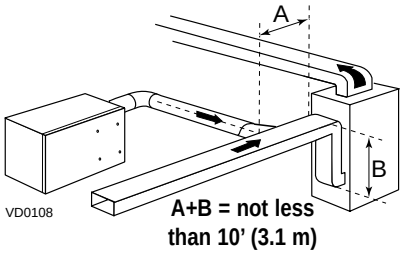


figure 10

6.4 Installing the Ductwork and Registers (cont'd)

6.4.3 Simplified installation (Volume Ventilation) (as illustrated in Section 5.3)

⚠ WARNING

When performing duct connection to the furnace, installation must be done in accordance with all applicable codes and standards. Please refer to your local building code.

CAUTION

When performing duct connection to the furnace ducts (Method 1), these ducts must be sized to support the additional airflow produced by the ERV/HRV. Also, the supply duct must be a steel duct with a backdraft damper. If there is no backdraft damper, it is mandatory that the ERV/HRV must always be running when the furnace is in operation to prevent the risk of overheating the ERV/HRV.

There are two methods (figures 11 and 12) for connecting the unit to the furnace:

Method 1: return-supply

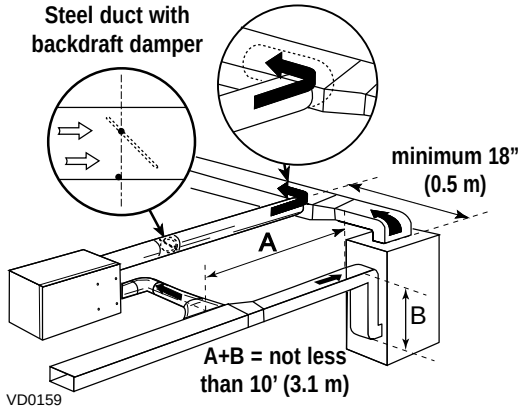


figure 11

Method 2: return-return

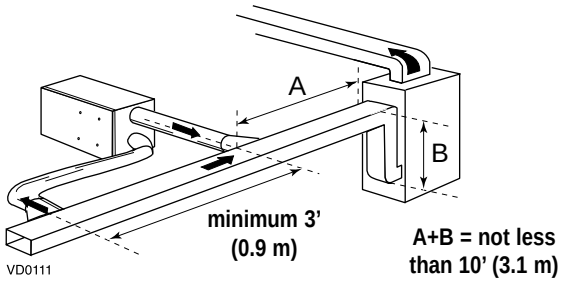


figure 12

Stale air intake:

- Cut an opening into the furnace return duct (not less than 10 feet (3.1 m) from the furnace).
- Connect this opening to the stale air intake port on the HRV/ERV as shown.

Fresh air distribution: (same instructions as for Method 1 or Method 2, Section 6.4.2).

CAUTION

If using Method 2, make sure the furnace blower operation is synchronized with the unit operation! See Section 8.5.

For Method 2 (return-return) make sure there is a distance of at least 3 feet (0.9 m) between the 2 connections to the furnace.

NOTE: For Method 1, it is not essential to synchronize the furnace blower operation with the unit operation, but we recommend it.

6.5 Connecting the Duct to the Unit

Insulated flexible duct

Use the following procedure for connecting the insulated flexible duct to the ports on the unit (exhaust to outside and fresh air from outside).

a) Pull back the insulation to expose the flexible duct.

b) Connect the interior flexible duct to the port using a duct tie.

c) Carefully seal the connection with duct tape.

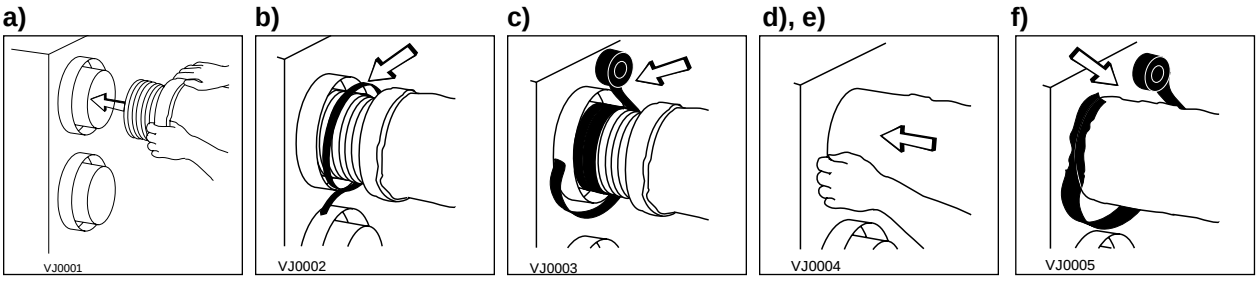
d) Pull the insulation over the joint and tuck it between the inner and outer rings of the double collar.

e) Pull the vapor barrier over the insulation and over the outer ring of the double collar.

f) Apply duct tape to the joint making an airtight seal. Avoid compressing the insulation when you pull the tape tightly around the joint. Compressed insulation loses its R value and causes water dripping due to condensation on the exterior surface of the duct.

CAUTION

Make sure that the vapor barrier on the insulated ducts does not tear during installation to avoid condensation within the duct.



Rigid duct:

Use duct tape to connect the rigid ducts to the ports.

CAUTION

Do not use screws to connect rigid ducts to the ports.

Make sure that the 2 balancing dampers are left in a fully open position before connecting the ducts to these ports (fresh air distribution port and stale air exhaust port as shown on figure 13).

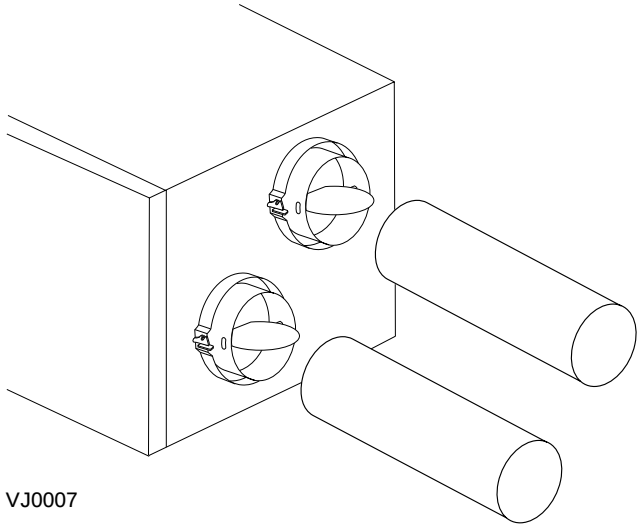


figure 13

6.0 Installation (cont'd)

6.6 Installing the Exterior Hoods

Choose an appropriate location for installing the exterior hoods:
- a minimum distance of 6 feet (1.8 m) between the hoods to avoid cross-contamination
- a minimum distance of 18 inches (457 mm) from the ground

Make sure the intake hood is at least 6 feet (1.8 m) away from any of the following:
- dryer exhaust, high efficiency furnace vent, central vacuum vent
- gas meter exhaust, gas barbecue-grill
- any exhaust from a combustion source
- garbage bin and any other source of contamination

Refer to figure 14 for connecting the insulated duct to the hoods. Place the "FRESH AIR INTAKE" sticker, provided in the installation kit, on corresponding hood. An "Anti-Gust Intake Hood" should be installed in regions where a lot of snow is expected to fall.

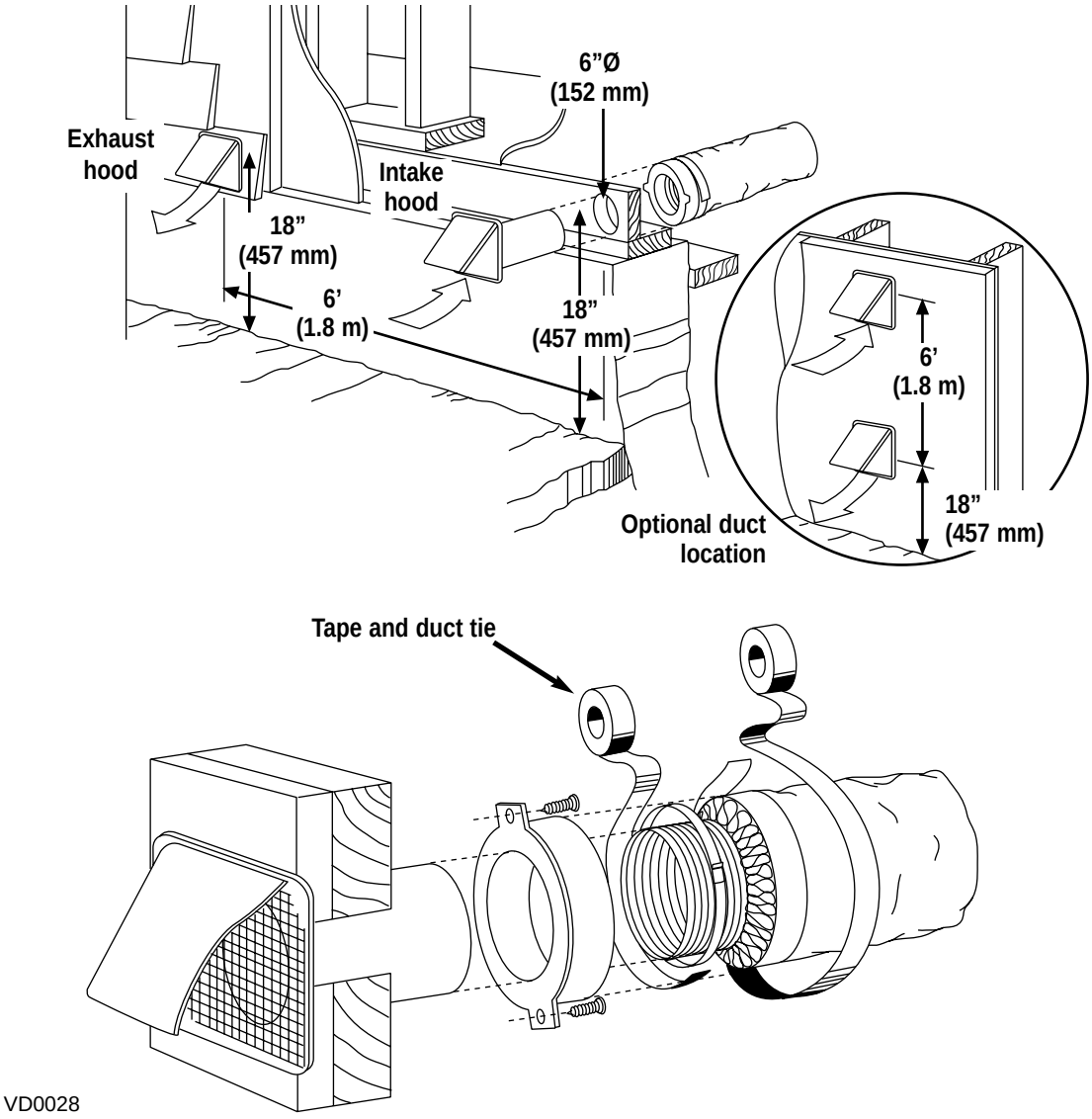
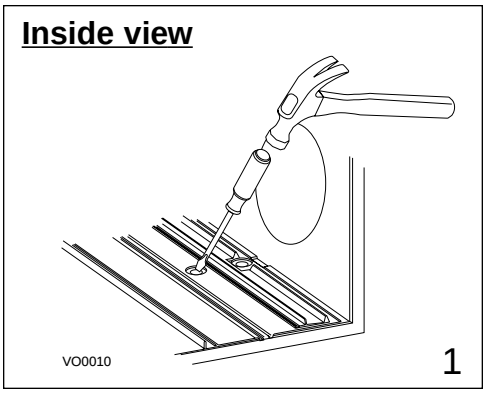


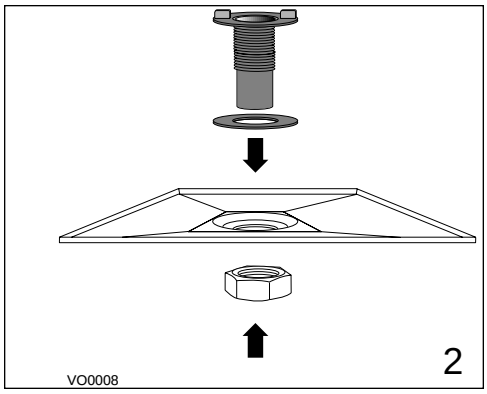
figure 14

6.0 Installation (cont'd)

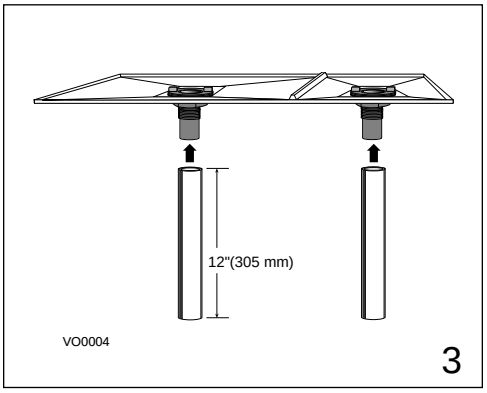
6.7 CONNECTING THE DRAIN (SOLO ONLY)



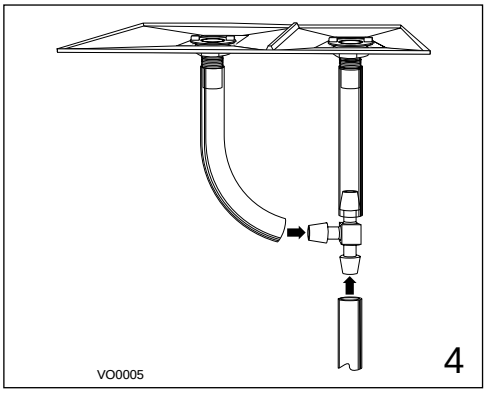
To install the drain fittings, punch the 2 knock-out sections located at the bottom of the unit.



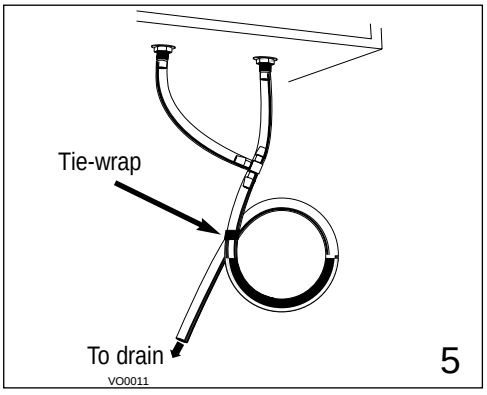
In order to keep the drain pan intact, hand tighten the 2 plastic drain fittings to the unit using the gaskets, washers and nuts as shown.



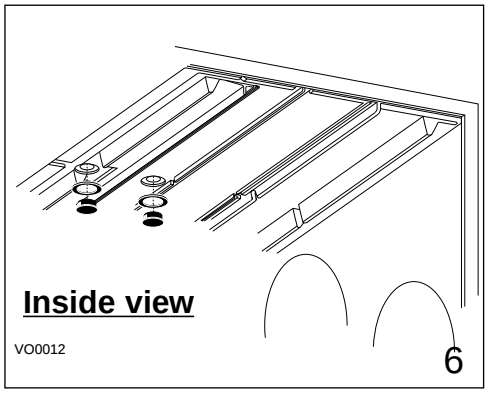
Cut 2 sections of plastic tubing, about 12" (305 mm) long and attach them to each drain fitting.



Join the 2 short sections to the "T" junction and main tube as shown.



Make a water trap loop in the tube to prevent the unit from drawing unpleasant odors from the drain source. Make sure this loop is situated BELOW the "T" as shown. This will prevent water from being drawn back up into the unit in case of negative pressure. Run the tube to the floor drain or to an alternative drain pipe or pail. Be sure there is a slight slope for the run-off.

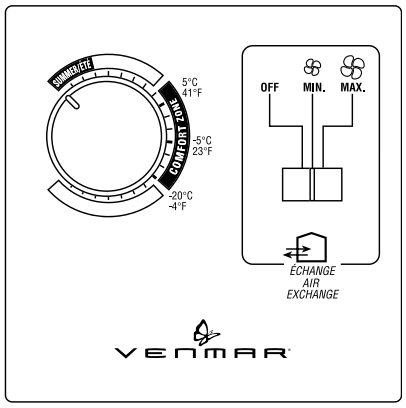


From the inside, install 2 snap bushings on top of the unit. **Do not punch the 2 knock-out sections.**

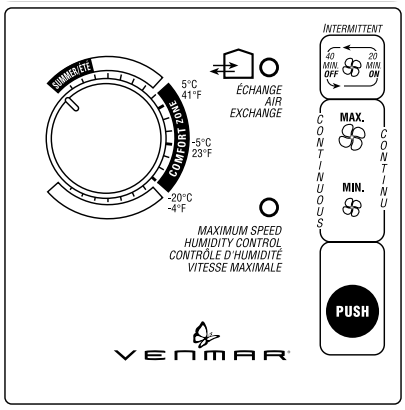
7.0 Control Devices

7.1 Main Controls

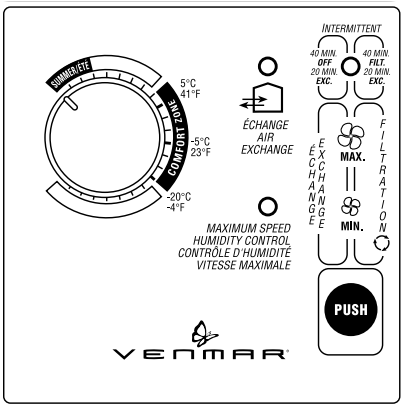
VENTA model



SUPRA model



ULTIMA model



	Models	Venta	Supra	Ultima
Models	Off Position	X	X	X
	Intermittent Exchange (40 min./ OFF -20 min./ON)		X	X
	Low Speed Continuous Exchange	X	X	X
	High Speed Continuous Exchange	X	X	X
	Intermittent Filtration (40 min./ filtration -20 min./exchange)			X
	Low Speed Continuous Filtration			X
	High Speed Continuous Filtration			X
Indicators	Mode Indicator		X	X
	Air Exchange Indicator		X	X
	Maximum Speed Humidity Control Indicator		X	X
	Flashing Maintenance Indicator		X	X
Switches	Sliding Button	X		
	Push Button		X	X

7.2 Optional Controls

20/40/60-minute push-button timer:

This remote illuminated switch is typically installed in bathrooms, kitchen and laundry room to provide 20, 40 or 60 minutes of high speed ventilation at the push of a button.

20-minute wireless push-button timer:

This remote control provides 20 minutes of high speed ventilation. There is no need for electrical connection between the transmitter and the receiver. The push-button timer can be installed in any room in the house. This type of push-button switch is easy to intall. It is powered from two 3-volt lithium batteries with an expected battery life of up to 3 years.

60-minute crank timer:

This timer allows up to 60 minutes of high speed operation to be selected from a remote location.

Dehumidistat:

This optional control helps control maximum humidity level during fall, winter and spring. You will find a relative humidity % scale meant to reduce the window condensation problems.

7.0 Control Devices (cont'd)

7.3 Other Features

Furnace interlock (for forced air heating system)

The furnace fan can be interlocked so that it will run simultaneously with the ventilation system to ensure proper distribution of fresh air throughout the house.

The Perfect Climate Comfort Center™

With the help of an interface, the operation of your ventilation system can be controlled by *The Perfect Climate Comfort Center™* (Honeywell control, W8900).

Permanent memory

Our electronic controls have a default memory feature in the event of a power outage. Even the date of the last service reminder is maintained as a convenience to the homeowner.

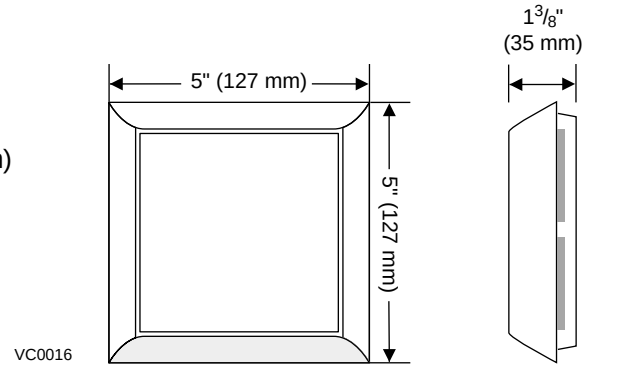
Control upgrades

All controls can be used on any unit, so a Venta control can be upgraded to a Supra or an Ultima in the future.

8.0 Installation of the Controls

8.1 Dimensions and Specifications (Main Controls)

Voltage: 12 volts DC
Dimensions: 5" x 5" x 1 3/8"
(127 mm x 127 mm x 35 mm)



8.2 Installation of the Main Control *(Venta, Supra & Ultima)*

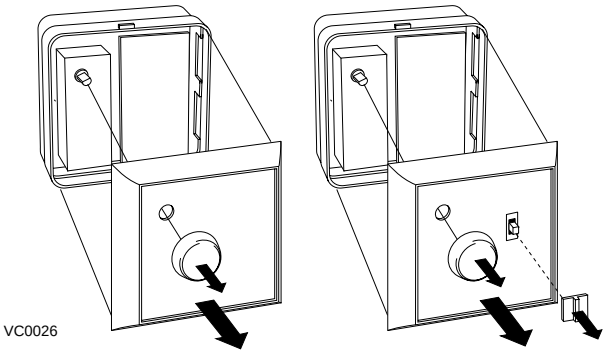
CAUTION

Never install more than one main control per unit.

INSTRUCTIONS:

1- Determine the location of the control. *The wall control must be installed in a central location on the main floor. Typical locations for these controls are kitchen, main hallways and family room.*

2- Remove the button(s) and the cover plate of the control.



8.0 Installation of the Controls (cont'd)

8.2 Installation of the Main Control (cont'd)

3- Install the wall control 60 inches (1.5 m) from the floor and leave a free space of at least 2 inches (5 cm) to the right of the control to allow user to slide out the control instructions.

Use the template provided in the control box to position the wire hole and the screw holes. Use the screws and the plastic anchors provided in the installation kit to secure the control. (See figure 15)

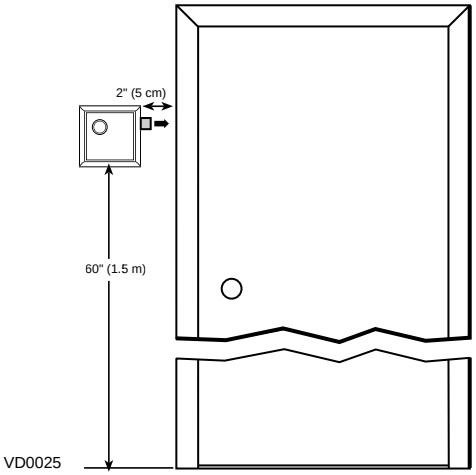


figure 15

4- Connect the wires to the main control. (See figure 16)

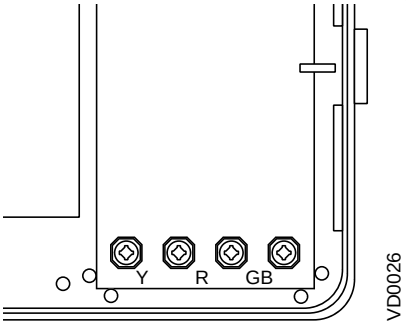


figure 16

5- Make sure the instruction pull-out is in the occupant's language. If not, turn it to the other side. (See figure 17)

6- Re-install the cover plate and the buttons.

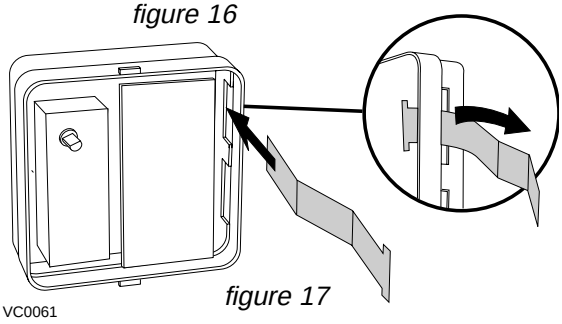


figure 17

7- Connect the wires to their corresponding position <u>inside the electrical compartment.</u>
Make sure the connections of the unit and of the wall control correspond exactly. (See figure 18)

8- Connect the optional controls (if applicable) by referring to Sections 8.3 and 8.4.

9- Do the appropriate connection to the furnace (if applicable) by referring to Section 8.5.

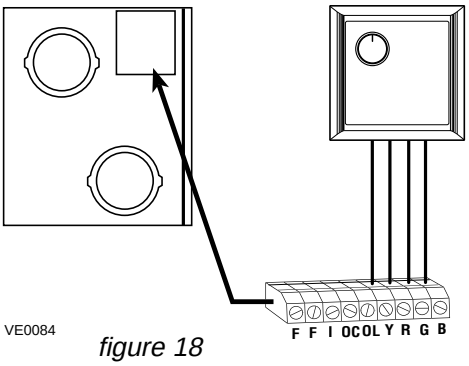


figure 18

10- NOTE: If you are in a cold region (zone A or B, as defined in Section 3.0), set up "extended defrost" by removing jumper JU1F on the main circuit board inside the electrical compartment (see Section 9.0).

11- Plug in the unit and do the "overall verification" of the system as described in Section 11.0.

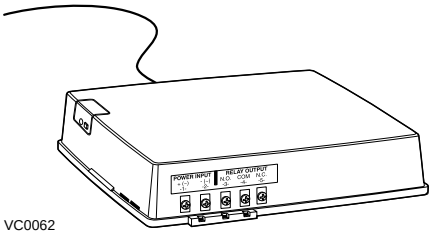
8.0 Installation of the Controls (cont'd)

8.3 INSTALLATION OF THE WIRELESS PUSH BUTTON AND RECEIVER

INSTRUCTIONS:

1- Determine the location of the receiver illustrated in figure 19.

Important:
- Mount receiver as high as possible for best radio range.
- Don't mount the receiver or push button directly on metal, concrete or near metal studs. This can decrease radio range by shielding the signal.
- Keep the receiver away from motors, fans and other electrical devices that may cause interference and reduce radio range.



VC0062

figure 19

2- Use screws to attach the mounting bracket (see figure 20).

3- Snap the receiver onto the bracket (see figure 20).

4- Pull the antenna straight.

5- Connect the wires referring to Section 8.4.

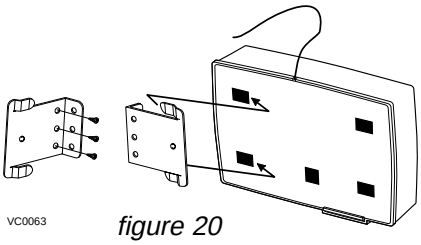

VC0063

figure 20

6- Remove the plastic tab on the push button.

7- Program the memory of the receiver for each push button (see "Programming Memory" below).

8- Determine the location of the push button.

9- Use the screws to attach the push button mounting bracket (see figure 21).

10- Snap the push button onto bracket.

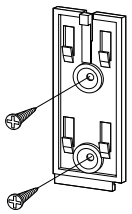
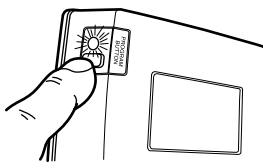

VC0064

figure 21

11- Do the "overall verification" as described in Section 11.2.

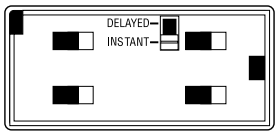
PROGRAMMING MEMORY

1. Press and release the program button.


VC0065

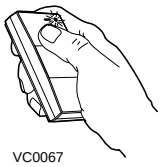
2. Program indicator will light for 3 seconds if there is room in memory for another push button (32 push buttons max.).

NOTE: The switch on the back of each push button must be set at "INSTANT" position.



VC0066

3. Within 3 seconds, press the push button. Indicator will flash as signal is received.


VC0067

4. Repeat the above three steps for each additional push button.

NOTE: The receiver can memorize each push button more than once. To prevent duplication of entries, program each push button into receiver only once.

CHECKING MEMORY

1. Press and hold the program button for about two seconds until indicator lights, then release (see drawing below).

2. Count the number of indicator blinks. This is the total number of push buttons programmed.

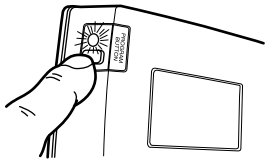
NOTE: Do not continue to press button or memory will be erased.

ERASING MEMORY

1. Press the program button and continue to hold it through the count of the push buttons.

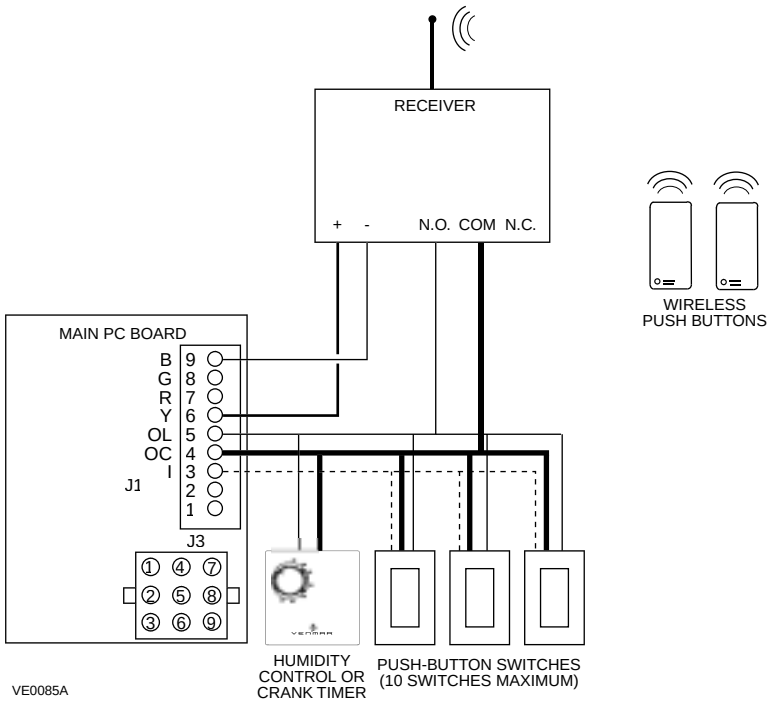
2. Continue to hold the button after the count until the indicator blinks one more time (about five seconds after the count).

3. All push buttons programmed into memory will be erased.


VC0065

8.0 Installation of the Controls (con'd)

8.4 Electrical Connection to Optional Controls



8.5 Electrical Connection to the Furnace

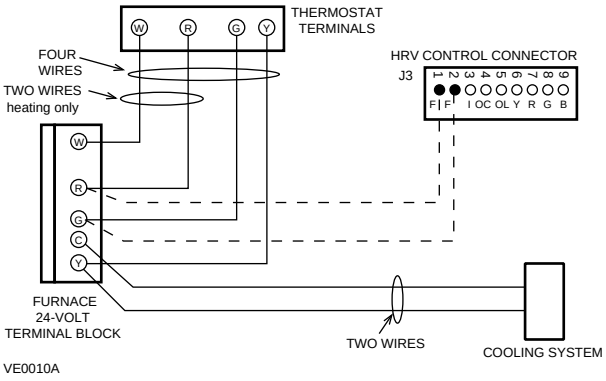
⚠ WARNING

Never connect a 120-volt AC circuit to the terminals of the furnace interlock (standard wiring). Only use the low voltage class 2 circuit of the furnace blower control.

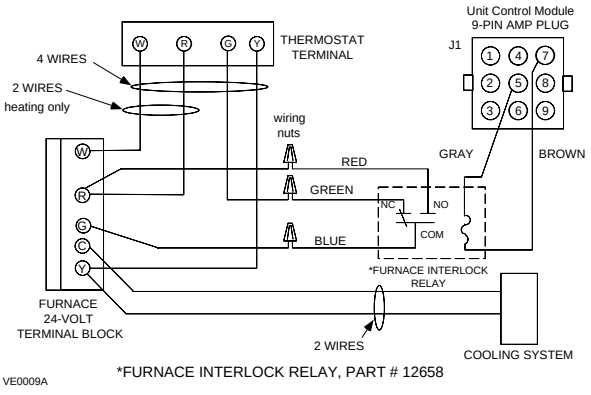
For a furnace connected to cooling system:

On some older thermostats, energizing the "R" and "G" terminals at the furnace has the effect of energizing "Y" at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the "alternate furnace interlock wiring". An additional control relay will then have to be installed.

Standard furnace interlock wiring



Alternate furnace interlock wiring



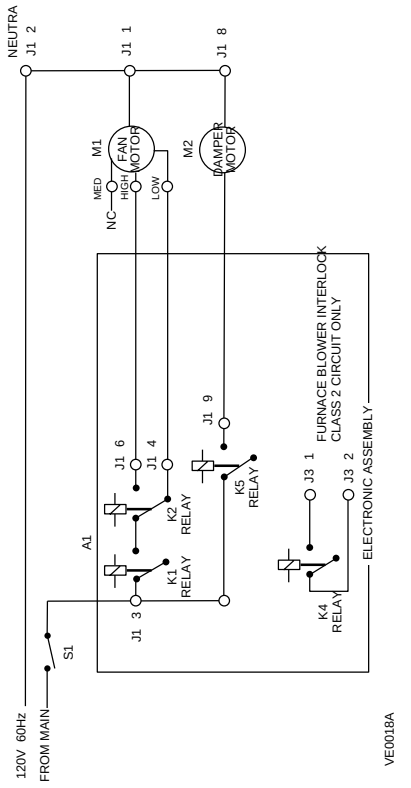
*FURNACE INTERLOCK RELAY, PART # 12658

9.0 Wiring Diagrams

⚠ WARNING

Risk of electrical shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.

Logic



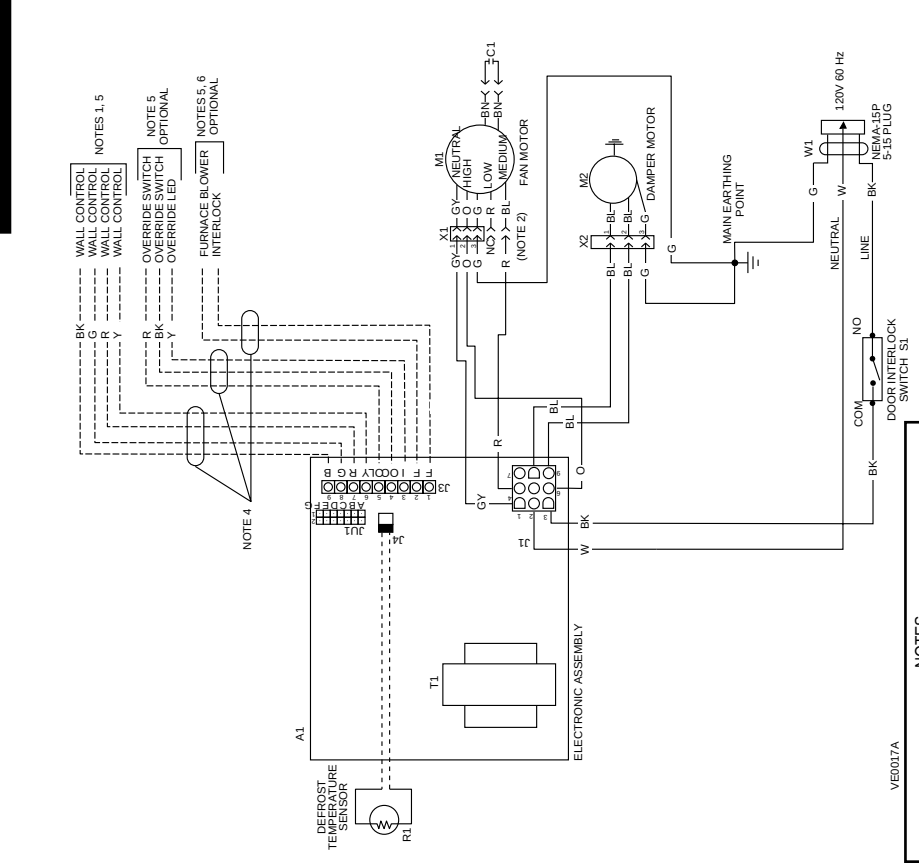
JUMPERS TABLE							TYPE	DEFROST TIME DEFROST/VENTILATION MINUTES		
JU1 A B C D E F G	JU1A	JU1B	JU1C	JU1D	JU1E	JU1F	JU1G		23°F / -5°C	5°F / -15°C	-22°F / -27°C
	IN	OUT	OUT	OUT	IN	IN	OUT	43720, 45720 43725, 45725	6/60	6/32	6/20
	IN	OUT	OUT	OUT	IN	OUT	OUT	EXTENDED DEFROST ALL TYPES	10/30	10/20	10/15

FUNCTION TABLE	RELAY			
MODE	K1	K2	K4	K5
Intermittent	0	0	0	1
Exchange Low	1	0	1	0
Exchange High	1	1	1	0
Circulation Low	1	0	1	1
Circulation High	1	1	1	1
Defrost Cycle	1	1	1	1
Off	0	0	0	1

0 = Relay coil is de-energized
1 = Relay coil is energized

Connection

Models: SOLO 1.5 and 2.0



COLOR CODE			
BK	BLACK	NC	NO CONNECTION
BL	BLUE	O	ORANGE
BN	BROWN	R	RED
G	GREEN	W	WHITE
GY	GREY	Y	YELLOW

VE0017A

NOTES

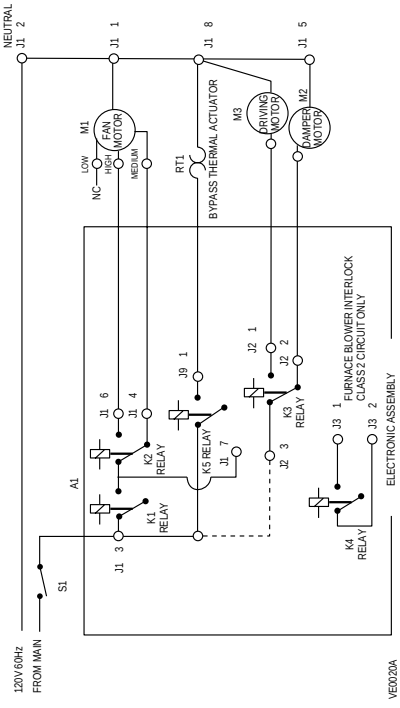
1- Controls available. See Section 8.0 (Low voltage only, 12VDC)
2- The factory set wiring for blower speed selection is high and low. Medium speed can be selected instead of low speed. Disconnect the RED wire from the motor RED tap and connect it to the motor BLUE tap.
3- If any of the original wire, as supplied, must be replaced, use the same or equivalent wire.
4- Use the factory supplied protective tubing.
5- The field wiring must comply with applicable codes, ordonnances and regulations.
6- The furnace fan circuit must be class 2 circuit only.

9.0 Wiring Diagrams (cont'd)

⚠ WARNING

Risk of electrical shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.

Logic



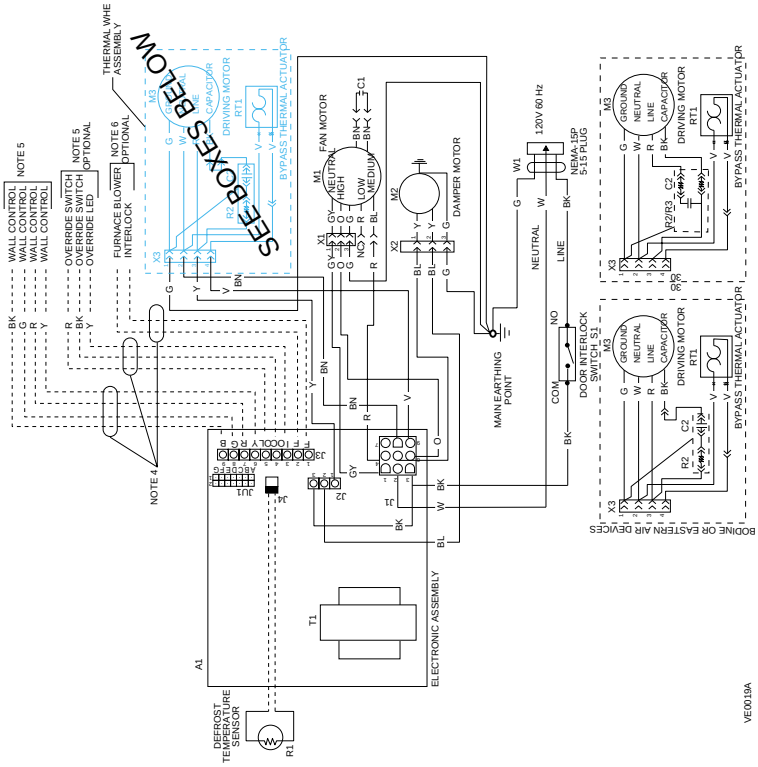
JUMPERS TABLE							MODEL
JU1A	JU1B	JU1C	JU1D	JU1E	JU1F	JU1G	
IN	IN	OUT	OUT	IN	IN	OUT	43700, 45700, 43710
IN	IN	OUT	OUT	IN	OUT	OUT	EXTENDED DEFROST

JU1: A B C D E F G

FUNCTION TABLE	RELAY				DEFROST		
MODE	K1&K4	K2	K3	K5			
Intermittent	0	0	0	1			
Continuous Low	1	0	1	0			
Continuous High	1	1	1	0	K5 active only (-15°C<T<+10°C)		
Circulation Low	1	0	0	1			
Circulation High	1	1	0	1			
						STANDARD	EXTENDED
Defrost Cycle	1	1	0	1	-5°C	9/60 min	10/30 min
					-15°C	9/32 min	10/20 min
					-27°C	9/20 min	10/15 min
Off	0	0	0	1			
0 = Relay coil is de-energized							
1 = Relay coil is energized							

Connection

Models: DUO 1.2, 1.4 and 1.9



LINE VOLTAGE
LOW VOLTAGE AND FIELD WIRE

NOTES

1- Controls available. See Section 8.0. (Low voltage only 12VDC)
2- Factory set wiring for blower speed selection is high and medium. Low speed can be selected instead of medium speed. Disconnect the RED wire from the motor BLUE tap and connect it to the motor RED tap.
3- If any of the original wire, as supplied, must be replaced, use the same or equivalent wire.
4- Use factory supplied protective tubing.
5- Field wiring must comply with applicable codes, ordonnances and regulations.
6- Furnace fan circuit must be class 2 circuit only.

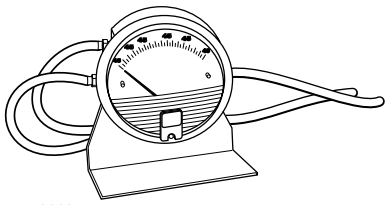
COLOR CODE			
BK	BLACK	NC	NO CONNECTION
BL	BLUE	O	ORANGE
BN	BROWN	R	RED
G	GREEN-YELLOW	V	VIOLET
GY	GREY	W	WHITE
		Y	YELLOW

DRIVING MOTOR CAPACITOR	DRIVING MOTOR RESISTOR	DRIVING MOTOR
1.7 uF, 250 VAC	300 Ohms, 7W	Bodine
1 uF, 330 VAC	400 Ohms, 10W	Eastern Air Devices
1 uF, 250 VAC	800 Ohms, 8W	Warner Electric

10.0 Air Flow Balancing

What you Need to Balance the Unit

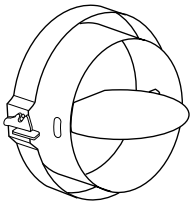
- A magnehelic gauge capable of measuring 0 to 0.5 inch of water (0 to 125 Pa) and 2 plastic tubes.
- The balancing chart provided with the unit.



VP0009

Preliminary Stages to Balance the Unit

- Seal all the unit ductwork with tape. Close all windows and doors.
- Turn off all exhaust devices such as range hood, dryer and bathroom fans.
- Make sure the balancing dampers are <u>fully open</u>.
- Make sure all filters are clean (if it is not the first time you balance the unit).



VD0051

Balancing Procedure

1. <u>Set the unit to high speed:</u>
   Make sure that the furnace blower is ON if the installation is in any way connected to the ductwork of the cold air return. If not, leave furnace blower OFF. If the outside temperature is below 0°C / 32°F, make sure the unit is not running in defrost while balancing. (By waiting 10 minutes after plugging the unit in, you are assured that the unit is not in a defrost cycle.) **Disconnect the wire of the bypass damper (Duo only).**

2. Place the magnehelic gauge on a level surface and adjust it to zero.

3. Connect tubing from gauge to EXHAUST air flow pressure taps (see diagram).
   Be sure to connect the tubes to their appropriate *high/low* fittings. If the gauge drops below zero, reverse the tubing connections.
   NOTE: It is suggested to start with the exhaust air flow reading because the exhaust has typically more restriction than the fresh air, especially in cases of fully ducted installations or source point ventilation. Place the magnehelic gauge upright and level. Record equivalent AIR FLOW of the reading according to the balancing chart.

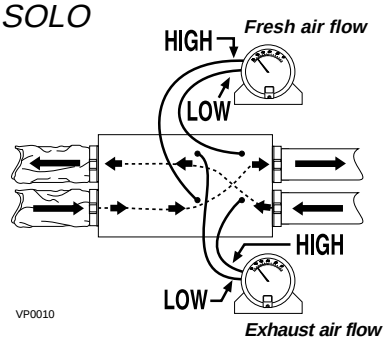
4. Move tubing to FRESH air flow pressure taps (see diagram). Adjust the fresh air balancing damper until the fresh air flow is approximately the same as the EXHAUST air flow. If fresh air flow is less than exhaust air flow, then go back and <u>adjust the exhaust balancing damper</u> to equal the fresh air flow.

5. Secure both dampers in place with tape or with a fastening screw.

6. Write the required air flow information on a label and stick it near the unit for future reference (date, maximum speed air flows, your name, phone number and business address). **Connect the wire of the bypass damper (Duo only).**

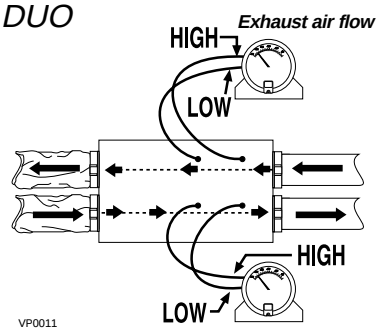
NOTE: The unit is considered balanced even if there is a difference of +/- 10 cfm or +/- 5 l/s or 17 m^3/h between the two air flows.

SOLO

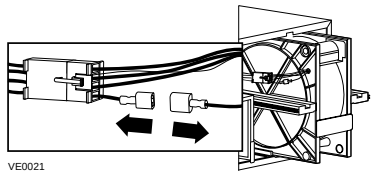


VP0010

DUO

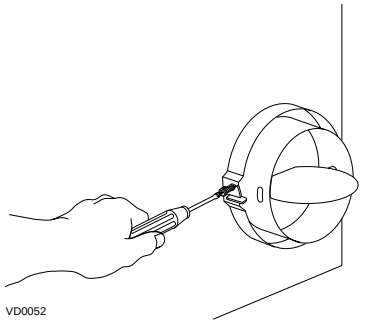


VP0011



VE0021

NOTE: *Always unplug bypass wire while balancing a Duo.*



VD0052

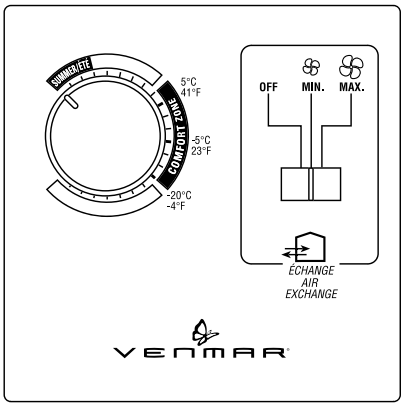
11.0 Overall Verification

11.1 Main Controls

This procedure allows the installer to verify that all modes of operation are fully functional.
During the verification of a main control, make sure that all optional remote controls are inactive.

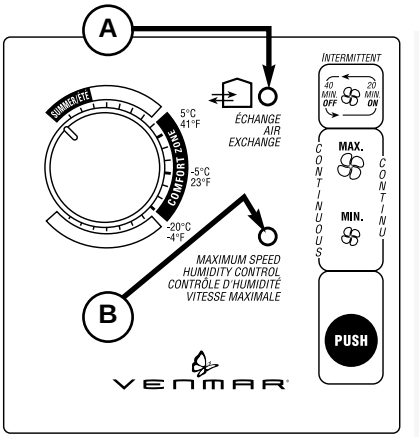
VENTA (6 different control scenarios to be tested)

	Set the slider switch to	Set dehumidistat dial to	**Results expected** fan speed / damper
1	off	maximum counterclockwise	motor off / closed
2	off	maximum clockwise	motor off / closed
3	min.	maximum counterclockwise	low speed / open
4	min.	maximum clockwise	high speed / open
5	max.	maximum counterclockwise	high speed / open
6	max.	maximum clockwise	high speed / open



SUPRA (8 different control scenarios to be tested)

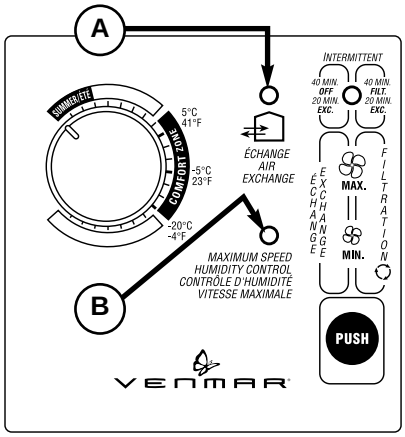
	Set air supply control to	Set dehumidistat dial to	**Results expected** Fan speed	Exchange indicator (**A**)	Max speed indicator (**B**)
1	off	maximum counterclockwise	off	*off	off
2	off	maximum clockwise	off	*off	off
3	min.	maximum counterclockwise	low	on	off
4	min.	maximum clockwise	high	on	on
5	max.	maximum counterclockwise	high	on	off
6	max.	maximum clockwise	high	on	on
7	intermittent	maximum counterclockwise	off 40 min low 20 min	*off 40 min on 20 min	off off
8	intermittent	maximum clockwise	high	on	on



**The dampers are closed when the exchange indicator is off.*

ULTIMA (14 different control scenarios to be tested)

	Set air supply control to	Set dehumidistat dial to	**Results expected** Fan speed	Exchange indicator (**A**)	Max speed indicator (**B**)
1	off	maximum counterclockwise	off	*off	off
2	off	maximum clockwise	off	*off	off
3	min. (green light)	maximum counterclockwise	low	on	off
4	min. (green light)	maximum clockwise	high	on	on
5	min. (red light)	maximum counterclockwise	low	*off	off
6	min. (red light)	maximum clockwise	high	on	on
7	max. (green light)	maximum counterclockwise	high	on	off
8	max. (green light)	maximum clockwise	high	on	on
9	max. (red light)	maximum counterclockwise	high	*off	off
10	max. (red light)	maximum clockwise	high	on	on
11	intermittent (green light)	maximum counterclockwise	off / 40 min. low / 20 min.	*off / 40 min. on / 20 min.	off off
12	intermittent (green light)	maximum counterclockwise	high	on	on
13	intermittent (red light)	maximum counterclockwise	low / 20 min. high / 40 min	on / 20 min. .*off / 40 min.	off off
14	intermittent (red light)	maximum counterclockwise	high	on	on



**The dampers are closed when the exchange indicator is off.*

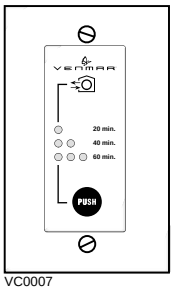
11.0 Overall Verification (cont'd)

11.2 Optional Controls

First, turn OFF the main control device before checking the remote optional controls.

20/40/60-minute push-button timer:

Activate the push button. Within 2 seconds, push one time for 20 minutes, two times for 40 minutes or three times for a 60-minute activation.



VC0007

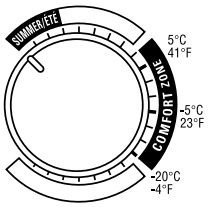
Results expected:

1. Motor speed: high for 20, 40 or 60 minutes.
2. Indicator light goes "ON" and flashes every 5 seconds (one time to indicate a 20-minute operation, two times for a 40-minute, and three times for a 60-minute operation).
3. Supra or Ultima wall controls: Air exchange indicator light goes "ON".

NOTE: To stop activation, push one more time.

Dehumidistat:

Turn dial to the maximum clockwise position (20%).

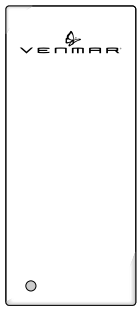


Result expected:

1. Motor speed changes to high.

20-minute wireless push-button timer:

Activate the push button.



VC0006

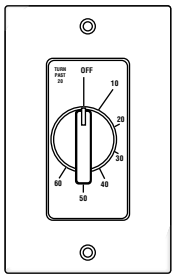
Results expected:

1. Indicator light goes "ON" while activating the push button.
2. Motor speed: high for 20 minutes.
3. Supra or Ultima wall controls: Air exchange indicator light goes "ON".

NOTE: To stop activation, push one more time.

60-minute crank timer:

Activate the timer.



VC0017

Results expected:

1. Motor speed: high for up to 60 minutes.
2. Supra or Ultima wall controls: Air exchange indicator light goes "ON".

12.0 Maintenance / Instructions for User

⚠ WARNING

Risk of electrical shocks. Before performing any maintenance or servicing, always disconnect the unit from its power source.

- Review with the user the steps required for the regular maintenance of her/his ventilation system. These steps are described in detail in the user manual:

FOUR TIMES A YEAR:

- Inspect the intake hood, and clean if needed.
- Clean the filters.
- Clean the interior of the cabinet and clean the door.
- Clean the condensation tray and inspect the drain tubing (SOLO only).

ONCE A YEAR:

- Clean the recovery module (core or thermal wheel).
- Clean the blades of the blower wheels if needed.

- Warn the user of the necessity to rebalance the system following a major house renovation or following the installation of any extra registers.
- Make sure the user understands how to use the main control as described in the user manual.

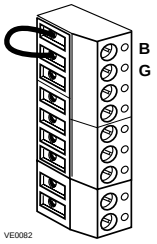
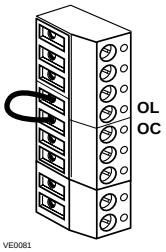
CAUTION

Do not oil the motor. It is already permanently lubricated.

13.0 Troubleshooting

NOTE: Be sure to unplug and inspect the unit before proceeding with these steps.

Start-up troubleshooting:

Problems	Possible causes	You should try this
1. Unit doesn't work.	• The circuit board may be defective.	• Unplug the unit. Disconnect the main control and the optional(s) contol(s) (If need be). Jump B and G terminals. Plug the unit. If the motor runs on high speed and the damper opens, the circuit board is not defective. 
2. The damper actuator does not work.	• The 9-pin connector may have a loose connection.	• Unplug the unit and check to make sure all the crimp connections are secured. Check the damper actuator connections as well.
	• The damper actuator may be defective.	• Feed 120 V directly to the damper actuator. If the problem persists, replace the damper actuator.
	• The circuit board may be defective.	• Replace the circuit board if the problem is not solved by the above.
3. The wall control does not work OR the indicators flash.	• Erratic operation of the control every 8 seconds.	• Unplug the unit. Wait 30 seconds. Plug it back in.
	• The wires may be in reverse position.	• Ensure that the color coded wires have been connected to their appropriate places.
	• The wires may be broken.	• Inspect every wire and replace any that are damaged.
	• There may be a short-circuit.	• With the help of a multimeter, check for continuity.
	• The wire in the wall OR the wall control may be defective.	• Jump “B” and “G” (BLACK and GREEN). If unit switches to high speed, remove the wall control and test it right beside the unit using another shorter wire. If the wall control works there, change the wire. If it doesn’t, change the wall control.
	• The circuit board may be defective.	• If the unit does not switch to high speed, replace the circuit board.
4. The dehumidistat does not work OR the 20/40/60-min. push-button timer does not work OR its indicator light does not stay on.	• The dehumidistat or push button may be defective.	• Jump the OL and OC terminals. If the unit switches to high speed, remove the dehumidistat or push button and test it right beside the unit using another shorter wire. If it works there, change the wire. If it doesn’t, change the dehumidistat or the push button. 

13.0 Troubleshooting (cont'd)

Problems	Possible causes	You should try this
5. 20-min. wireless push button timer doesn't work.	• Plastic tab on batteries has not been removed from push button.	• Remove the tab, program memory of receiver and try again (see Section 8.3).
	• Poor location for push button and/or receiver.	• Use 1/4" to 1/2" wood shims to move off the surface or try different locations.
	• Light indicator flashes while activating the push button.	• Low batteries. Open push button casing and change batteries. (Refer to user manual.)
	• Push button batteries are dead.	• Open push button casing and change batteries. (Refer to user manual.)
	• Push button not properly programmed in receiver or the switch on the back of the push button is not at "instant" position.	• Re-program the memory of the receiver (refer to Section 8.3).
	• Receiver not properly wired.	• Ensure that the wires have been connected to their appropriate places (see Section 8.4).
	• The wires may be broken.	• Inspect every wire and replace any that are damaged.
	• There may be a short-circuit.	• With the help of a multimeter, check for continuity.
6. The defrost cycle does not work (the fresh air duct is frozen OR the fresh air distributed is very cold OR the "AIR EXCHANGE" light flashes).	• Ice deposits may be hindering the damper operation.	• Remove the ice.
	•The damper rod or the port damper itself may be broken.	• Inspect these parts and replace if necessary.
	• The damper actuator may be defective.	• Plug in the unit and select "MIN" or "MAX". Press the door switch and see if the port damper opens. If it doesn't open, feed 120V directly to the damper actuator. If the port damper still doesn't open, replace the damper actuator.
	• The circuit board may be defective.	• Unplug the unit. Unplug the defrost sensor wire (see J4 on electrical diagram Section 9.0). Plug the unit back in. Select "MIN" and make sure the unit is adjusted for low speed operation (turn all dehumidistats maximum counterclockwise). Wait 3 minutes. The unit should switch to high speed and the damper at the fresh air intake port should close (defrost mode). If this doesn't happen, then replace the circuit board.
	• The thermistor may be defective.	• If the defrost mode works well after having disconnected the thermistor wire (above test), this means the thermistor is probably defective. You should replace it.

14.0 References

- HVI, "Installation Manual for Heat Recovery Ventilators", 1987 edition.
- ASHRAE 1984 Systems Handbook, chapter 11, "Air Distribution Design for Small Heating and Cooling Systems".